

# MICHAEL REYNOLDS SOLLAMI

## OFFICE CONTACT

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## CURRENT POSITION

### JAN 2013 - PRESENT

**Title:** Application Architect and Research & Development Lead  
**Reference:** Carl Preston Shimer III, Senior Backend Architect, [carl@mustbin.com](mailto:carl@mustbin.com)

## DOCTORAL STUDIES

### DISSERTATION

University of Wyoming	Studies 2007-2013
PhD, Mathematics	GPA: 4.0 of 4.0
<i>Methods in Computational Graph Theory</i>	Graduated 2013

### COMMITTEE

Professor Farhad Jafari	Professor Craig Douglas	Professor David Cruz-Uribe
University of Wyoming	University of Wyoming	Trinity College
Mathematics Department	School of Energy Resources	Mathematics Department
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## SOFTWARE KNOWLEDGE

### LANGUAGES

**Primary:** Swift, Clojure, Go, Mathematica, Java, C/C++/C#, Objective-C and Cocoa, Processing, Lisp, Python, Ruby, Rust.

**Parallel & cloud computing:** Hadoop, OpenMP, MPI, OpenACC, OpenCL, and CUDA-compatible hardware

### OTHER TECHNOLOGIES

**Computer algebra:** MATLAB, Maple, GAP, and SymbolicC++, and LaTeX.

**Web 2.0 technologies:** Javascript (including environments such as jQuery), PHP, MySQL, HTML5, CSS3, and Ruby on Rails

**Operating systems:** Most Unix & Linux variants, Mac OS X, Windows

## PRIOR EDUCATION

### MASTERS OF SCIENCE

Theoretical Computer Science	Thesis: <i>Hyperclique Algorithms</i>	Professor Eric Moorhouse
Department of Mathematics	GPA: 3.91 of 4.0	University of Wyoming
University of Wyoming		<a href="mailto:moorhous@uwyo.edu">moorhous@uwyo.edu</a>

### BACHELORS OF SCIENCE WITH HONORS

Computer Science & Mathematics	GPA: 3.98 of 4.0
Trinity College, Hartford CT	Placed 7th in class of 2006
Budapest Semesters in Mathematics	Computer Vision Research Fellowship

**INDUSTRY  
EXPERIENCE****LEAD OF R&D & IOS ARCHITECT, MUSTBIN, BOSTON, MA****2013 - 2014**

I was recruited by angel investor and CEO Brian Shin of Visible Measures to become the at a new startup called Mustbin. Our team was since launched a novel private social network and storage platform with world class security and a mobile first experience. Innovation in both software architecture and UI/UX has led to viral user growth and our 40 million plus dollar valuation.

**PHD, MATHEMATICS & COMPUTER SCIENCE, UNV. OF WYOMING****2013**

I completed my dissertation under the advisement of Professor Craig Douglas (Yale). We discovered some key results in the application of evolutionary algorithms to the study of NP-complete combinatorial decision problems. We developed, parallelized, and proved results pertaining to algorithms that quickly solve network analysis problems and introduced new results in combinatorics and integer sequence theory.

**RESEARCH PROGRAMMER, WOLFRAM RESEARCH, CAMBRIDGE, MA****2009 - 2013**

I worked directly for Steven Wolfram's "skunk works" advanced research group (ARG). Starting in 2009 I worked in the same group that Sergey Brin had interned at, spearheading new advanced projects for WRI. These projects included Wolfram Alpha technology applications, data science projects, mathematics education initiatives, and the development of next generation functionality for future versions of Mathematica. During the summers, I taught at the Wolfram Science summer schools - intense month long research boot camps exploring computational methods developed by Steven in his monogram "A New Kind of Science".

**SOFTWARE CONSULTANT, INCREDIBLE NUMBERS APP, LONDON, UK****2012**

I worked as the iOS consultant for Theodore Gray's Touch Press, a mobile ebook software contracted by professor Ian Stewart to build an app for learning about math. The core objective necessitated adapting the Mathematica kernel (written in a variant of C++ and Java) to run on armv7 and arm64 device architectures interfacing with Apple's iOS SKD.

**ENGINEER, GODDARD SPACE FLIGHT CENTER, GREENBELT, MD****2008**

In 2008 I worked as a software engineer within NASA's Formation Flying Test Bed (FFTB). I was tasked with software and data analysis for future NASA satellite launch missions assigned to the FFTB. One project of particular interest included developing a flight simulation test suite for critical satellite components for the Magnetospheric Multiscale mission. We stress tested and verified the correctness of satellite communication systems. When launched in late 2014, they will be used to study the dynamics of the geospace environment.

**LEAD ANALYST, WARISAN CAPITOL, WESTPORT, CT****2006 - 2007**

I led the Quantitative analysis group at Warisan Capital LLC. Warisan, a globally mandated hedge fund of fund (F2) was founded by CFO Scott Akers, formerly VP of Deutsche Bank's Pacific Rim trading. Mr. Akers recruited me to become the lead Quant. I oversaw the statistical analysis of our holdings as well as time series modeling and prediction. We relied on an in-house platform developed for time series analysis and portfolio stress testing using C and GTK which ran sophisticated probabilistic methods from financial engineering.

**NOTABLE  
PROJECTS****MUSTBIN PLATFORM**

We built the world's first NSA-proof cloud based mobile data storage and sharing system. Mustbin's cryptosystem was built from the ground up by experts in encryption and validated by cyber-security industry experts. After releasing version 1.0 in November 2013, by the following year Mustbin had received multiple technology commendations along with the prestigious MITX award for the *Most Innovative App of 2014*.

**THE NATIONAL MUSEUM OF MATHEMATICS**

I had the honor of being a principle member of the team that designed and implemented the flagship exhibit (and logo) for the National Museum of Mathematics on 26th street in New York, NY. I personally designed and installed the firmware inside the museum shortly before the grand opening. The exhibit dynamically generates symmetric motifs, allowing users to explore dihedral and cyclic symmetries through a video game console. Some major challenges I resolved included implementing fast polyhedron boolean operators in java and the integration of custom firmware and hardware.

**SIRI & ALPHA PRO**

The query recognition system that powers the Apple's Siri service for data related questions is a piece of Wolfram technology that our Special Projects group created. The other successful Wolfram|Alpha spinoff that we developed was Alpha Pro, the world's first smart data analytics tool for nontechnical users. In less than a year we had built and launched a data science platform that allows one to upload arbitrary files and then ask questions in natural language about their data. Now a year old, Alpha Pro can now integrate with Facebook to generate automatic reports of relevant statistics and intelligently summarizes conclusions about your social network.

**MATHEMATICA & WOLFRAM ALPHA**

As a senior member of the R&D team that developed Mathematica, I contributed significant amounts of code to the project in computer algebra and key algorithmic areas including: natural language parsing, mathematics content, core language, graphics and visualization, data science, and image processing.

**NASA EARTH SCIENCE SATELLITE COMMUNICATION SYSTEMS**

The [MMS mission](#) is a Solar Terrestrial Probe mission comprising multiple spacecraft that fly in formation through the Earth's magnetosphere in 2015 to study the microphysics of plasma processes affecting space weather. As a software engineer I worked to ensure functionality of critical satellite constellation communications systems, the project's main hurdle was accounting for relativistic effects in onboard clocks.

**RESEARCH****RESEARCH FIELDS & TOPICS**

Distributed Computing & Big Data	Computer Vision	Startups & World Impact
Machine Learning and AI	User Interface & Experience	Marketing Analytics
Approximation Algorithms	Systems Software Design	Growth Hacking

**PREVIOUS RESEARCH GROUPS**

1. Advanced Research Projects at Mustbin Inc.
2. Stephen Wolfram's ARG (Advanced Research Group)
3. Multilevel Dynamic Data-Driven Application Simulation
4. NASA's Flying Formation Flight Test Bed at Goddard
5. Warisan Capital Q3 Analytics Group
6. Univ. of Central Florida's Computer Vision Lab

**PUBLISHED PAPERS**

*A New Bound on the Number of Ternary Square-Free Words*  
*Novel Hyperclique Approximation Algorithms*

**HONORS AND AWARDS**

MITX Most Innovative App of the Year	2014
Steven Lane Ashley Mathematics Scholarship	2010
UW's Most Outstanding Graduate Major Award	2009
First three year, dual honors double major graduate at Trinity College	2006
Winner of the <a href="#">Phi Gamma Delta Mathematics Prize</a>	2006
Induction to the Phi Beta Kappa Society	2006
Named the National Dean's Scholar	2005
UCF Computer Vision Research Fellowship Recipient	2006
Faculty Honors all Semesters	2005
Valedictorian, Storm King Prep School	2002
Induction to the National Honor and Cum Laude Societies	2002

**CONFERENCES**

Amazon Web Services Technology Conference - Las Vegas, NV	2014
Consumer Electronics Showcase - Las Vegas, NV	2014
Apple's World Wide Developer Conference, San Francisco, CA	2013
Wolfram Technology Conference, Urbana-Champaign, Illinois	2012
Invited Mathematics Speaker, <a href="#">Karl-Franzens-Universität Graz</a> , Graz, Austria	2011
National Joint Mathematics Meetings of the AMS and the MAA, Boston, MA	2010
Designs, Codes, and Geometries Conference. University of Delaware	2009
Rocky Mountain Discrete Math. University of Colorado, Denver	2008
Hypergraph Workshop, Institute for Pure and Applied Mathematics, UCLA	2004

**TEACHING****CONSULTATION**

Code and non-code level algorithmic consultation	2010 - 2013
Mobile app development (iOS and OSX) consultation	2013 - 2014

**LECTURES**

<a href="#">Mathematica School, Instructor and Lecturer</a>	2012
<a href="#">New Kind of Science School, Teaching Assistant</a>	2010 - 2013
University of Wyoming Mathematics Lecturer	2007 - 2010
<b>Courses taught:</b> Multivariate Calculus, Problem Solving, Java, Graph Theory, Advanced Numerical Methods, Analysis of Algorithms...	

**OTHER INTERESTS**

**CERTIFICATIONS**

Broker License - Certification Series 63  
PADI Advanced Scuba Diver  
US Certified Life Guard

**MUSIC**

Lead singer of Boston-based cover band 1990Fine!  
Composition and performance of classical piano  
Acoustic and Electric Guitar

**OTHER**

Philosophy of Science  
Theory of Programming Languages  
Competitive Memory Contests  
High IQ Society Entrance Exam Authoring  
(Giant) Slalom Downhill Racing

**COMMUNITY**

Habitat for Humanity  
Big Brothers & Big Sisters

**ARTS**

DSLR & HDR Photography and Filters  
Poetry Composition and Essay writing  
Software/Generative Art  
Mobile, Web, and Graphic Design